AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Canceled)

2. (Currently Amended) The method of claim ~~1~~ 4 wherein ~~the step of~~ said estimating motion associated with said video sequence of images ~~further~~ includes selecting a single image frame from said video sequence as a template from which the motion of all other frames of video is estimated.

3. (Currently Amended) The method of claim 2 ~~1~~, where ~~in the step of~~ said estimating motion associated with said video sequence assumes a displacement, ~~said displacement is estimated by the steps of~~ and includes:

estimating nearest pixel displacement by image correlation;

estimating subpixel displacement by a least squares solution of brightness constancy constraint equation applied to aligned images;

tagging every pixel in said template with a whole integer coordinate; and

tagging every pixel in other frames with an adjusted coordinate based on the displacement estimate of said other frames.

4. (Currently Amended) ~~The method of claim 1 where in the step of~~ A method of enhancing images from an electro-optic imaging system, comprising:

estimating motion associated with a sequence of images collected from an object source;

assembling said sequence of images to form a single composite image based on estimated positions of individual pixels and estimated uncertainties of the estimated positions; and

restoring the composite image,

wherein said estimating motion associated with said video sequence includes associating with each pixel of the sequence of images ~~quantities relevant to subsequent image restoration, comprising:~~ a pixel intensity~~;~~ , an X-coordinate location~~;~~ , a Y-coordinate location~~;~~ , an X-coordinate estimate uncertainty~~;~~ , and a Y-coordinate estimate uncertainty.

5. (Currently Amended) ~~The method of claim 1 wherein the step of~~ A method of enhancing images from an electro-optic imaging system, comprising:

estimating motion associated with a sequence of images collected from an object source;

assembling said video sequence of images to form a single composite image based on estimated positions of individual pixels; and

restoring the composite image,

wherein said ~~the step of~~ assembling video frames into a single composite image based on estimated positions of individual pixels of the sequence of images ~~further comprises:~~ includes

defining and constructing a lattice array with a higher sampling density than a template image~~;~~ ,

computing for each lattice site an associated coordinate interval corresponding to a rectangular span of each lattice site relative to said template image coordinate grid~~;~~ ,

finding and selecting all pixels whose estimated coordinates and uncertainty intervals are statistically likely to belong within the rectangular span of each lattice site, ~~and~~

processing intensity values associated with selected pixels by an aggregate estimator to produce a single intensity estimate for each lattice site thus forming a composite image, and

determining an uncertainty of said lattice intensity estimates to produce an adjunct lattice of statistical variances of intensities of the composite image.

6. (Canceled)

7. (Currently Amended) The method of claim ~~1~~ 6 wherein ~~the step of~~ said restoring a composite image comprises an image ~~deconvolution,~~ restoration ~~with enhancement~~ algorithm, said algorithm leveraging the adjunct matrix of statistical variances of intensities of the composite image to reduce effects of known blurs in pixels and optics.

8. (Currently Amended) A system for enhancing images captured by an electro-optic imaging sensor and for reducing focal length of said sensor while preserving system acuity, comprising:

~~a computer executing software for collecting a video sequence of images from a sensor;~~

~~said~~ a computer executing software for estimating motion associated with ~~said video~~ a sequence of images from a sensor,

wherein said estimating motion associated with said sequence includes associating with each pixel of the sequence of images a pixel intensity, an X-coordinate location, a Y-coordinate location, an X-coordinate estimate uncertainty, and a Y-coordinate estimate uncertainty;

said computer executing software for assembling said ~~video~~ sequence of images to form a single composite image based on intensity information, ~~and~~ estimated positions of pixels in the ~~a~~ ~~video~~ sequence, and estimated uncertainties of the estimated positions; and

said computer executing software for restoring ~~a~~ the composite image.

9. (New) A system according to claim 8, wherein said restoring a composite image includes generating a noise estimate associated with every composite image pixel's estimated intensity based on a subsample of video pixels estimated to fall within the coordinates span of a composite image pixel's location, and said noise estimates being used in said restoring of the composite image.

10. (New) A system according to claim 8, wherein the sensor has a focal plane array, and the spatial sampling of the composite lattice exceeds that of the focal plane array, permitting the use of a lens with reduced focal length than otherwise needed to eliminate alias distortion of a single frame of video.

11. (New) A method of generating an enhanced images from a sequence of images collected by an electro-optic imaging system from an object source, the method comprising:

estimating motion associated with the sequence of image;

assembling said sequence of images into a composite image by estimating positions of individual pixels of the sequence of images and uncertainties of the positions, estimating an intensity of each pixel of the composite image, and generating a noise estimate associated with the intensity of each pixel of the composite image, the intensity and the noise estimate being derived from a subsample of pixels of the series of images located within the coordinates of a composite image pixel's spatial location; and

restoring the composite image based on said noise estimates and said intensity.